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SALAMA - Swahili Language Manager

2021-02-12

Hurskainen , A 2021 ' Accurate information retrieval from large corpora : Extended Swahili monosyllabic verbs ' Technical Reports on Language Technology , no. 28 , 68 edn , SALAMA - Swahili Language Manager , Helsinki . <

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<http://hdl.handle.net/10138/330100>

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Accurate information retrieval from large corpora: Extended Swahili monosyllabic verbs¹

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Abstract

In the technical report No. 67, I described how accurate information retrieval from large corpora is possible. I used Swahili monosyllabic non-extended verbs as test cases, because that word group is particularly difficult to manage computationally, due to the extremely short stable material in the word. In this report I continue with the same verb group, but the test cases consist of the extended forms of the Swahili monosyllabic verbs. To be precise, the extended forms are not any more monosyllabic, and this causes changes to inflection. Whereas the inflection of monosyllabic verbs requires the infinitive marker *ku* in many forms, in extended forms of the same verbs this is not required. I show how some extended forms can be retrieved using a simple string search, while others require the two-phase method.²

Key Words: *information retrieval, language analysis.*

1 Introduction

Precise information retrieval from large corpora is problematic, because, in order to be accurate, the text should first be analysed and disambiguated, so that search can be targeted to the base form of the word. In-flight analysis and disambiguation can be conveniently applied only to texts of a few thousand sentences.

We can overcome the problem by using a two-stage method. In the first phase we search from the raw text using such a search key, which includes all true hits, but also unwanted hits. We test the size of the result for deciding how we proceed. There are three basic possibilities.

(a) If the result is clean, that is, the result has all wanted hits and no unwanted hits, no further processing is needed.

(b) If the result has true hits and unwanted hits, but its size is so small that it can be converted to rich text format, this will be done, and the final search is done using the precise search method.

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² The two-phase search method is described in the Technical Report No. 67

(c) If the result has true hits and unwanted hits, but its size is too big for converting it to rich text format, constraints should be used for reducing the size. The reduced text should then be converted to rich text format, and the search will be done using the precise search method.

Below I have tested the search of all known extended forms of the monosyllabic verbs of Swahili, excluding the verb *ku-wa* (to be), which is too frequent to suit for this kind of search.

2 The verb *ku-nya* (to fall, to drop, to shit)

The monosyllabic verb *ku-nya* has such extended forms as *ku-nyea* (to shit on), *ku-nywa* (to drink, to absorb), *ku-nyweshwa* (to irrigate, to give a drink), *ku-nyweshwa* (to give a drink), and *ku-nyweka* (to be drinkable).

2.1 The applicative form *ku-nyea* (to shit on)

The applicative form of the verb is found only in some idioms. With the search key 'nyea ' we find only 63 occurrences from the corpus of 25 million words. Some of them are in (1).

(1)

njini iliyogonga kikiwa kimebonyea pamoja na mabehewa yaliyo
yo ambaye alionekana kunyong'onyea mara baada ya kutandikwa
lakini wamejikuta wakienda kunyea debe baada ya kushindwa k
uyo, ambaye alikuwa amenyong'onyea mara baada ya hukumu hiyo
a mwaka mpya wa 2003 akiwa ananyea debe rumande.
Chiloweka ameonekana kunyong'onyea sana mara baada ya hakimu
a. Baada ya mbera njo baba nyonyea (?) ya kuelezea ngarawa.
i bajeti yake imekuwa ikinyogonyea kufuatia hali ya kudhoofi
a kubadili mkondo wa kunyong'onyea ukuaaji wa kiuchumi nchini
gi midomo yake na mashavu hubonyea na kumfanya aonekana kama
o hukauka. Utosi wa mtoto hubonyea na mtoto kunyong'onyea. M
nyezwa hubaki na alama ya kubonyea baada ya kidole kuondolew
wake. Mwisho ni tabia ya kujinyea Encopresis. Hii ni tabia
; tusifanye ujanja wa Popo kumnyea Mungu kumbe anajinyea mwe
Popo kumnyea Mungu kumbe anajinyea mwenyewe.
hindi, uvimbe huweza kunyong'onyea na madoa kuanza kutoweka.
Mkunga: Tochi, Mpira wa kunyonyea ute mdomoni na puani mwa
- Kama umebonyea ndani ni dalili kuwa mtot
irika ni kama vile: - Pua hubonyea (Saddle nose deformity, k
nguvu na nikakonda, kunyong'onyea na hata nikaanza kutembea
ya Jiji kupata magari ya kunyonyea maji machafu.
i. Christina alizidi kunyong'onyea zaidi alipokuwa akiona mt
alimbali yakiwemo ya kunyong'onyea mwili na kuwashwa kwa mud
wenzake kuwa kuna mtu anamuhenyua (kumsomea) ndiyo maana ye
aa, niliumia sana, nikanyong'onyea nikajiuliza hii tena ni b
na pale palipobonyea ndipo lilipoanguka "Nesi
ililoiva sana kutokana na kubonyea hadi ndani kulimfanya ach
hilo mkoani hapa, wamenyong'onyea na kueleza kusikitishwa k

Only some correct hits are in the sample. Yet, because the text is small, we can process the text directly into rich text format and do precise search (2).

(2)

```
$ echo {nyea_V | find-word
```

```
Washtakiwa hao wamekana vikali shtaka hilo, lakini wamejikuta wakienda  
kumyea {nyea_V} debe baada_ya kushindwa kutimiza masharti ya dhamana  
waliyopewa na mahakama.
```

```
Waliotunga methali hizi ni kama walijua kisa cha kijana huyu wa Kawe  
Kilimahewa aitwaye Kulwa Ramadhani, 23, ambaye pamoja_na ujanja wake wote  
amejikuta akinaswa tena kwa kitu kidogo mno na sasa alazimika kulia  
sikukuu ya Krismas na kuupokea mwaka_mpya wa 2003 akiwa ananyea {nyea_V}  
debe rumande.
```

```
Hebu Watanzania tuwe makini; tusifanye ujanja wa_Popo kumyea {nyea_V}  
Mungu kumbe anajinyea {nyea_V} mwenyewe.
```

```
Hawa Waafrika wasomi kutoka shule za misheni na Makerere walikuwa  
watiifu kwa taasisi mbili zanyea {nyea_V} nguvu nchini, yaani serikali  
ya_kikoloni na Kanisa.
```

```
Wajue kuwa dhana ya kuwatahiri watoto_wa_kike kwa kificho na wakati wa  
kujifungua ni sawa ujanja wa_popo kutaka kumyea {nyea_V} Mungu kumbe  
anajinyea {nyea_V} mwenyewe.
```

```
<KIO> Heur Wajue kuwa dhana ya kuwatahiri watoto_wa_kike kwa kificho na  
wakati wa kujifungua ni sawa ujanja wa_popo kutaka kumyea {nyea_V} Mungu  
kumbe anajinyea {nyea_V} mwenyewe.
```

We see that there are only 6 true cases of the extended verb form *nyea* in the corpus.

2.2 The verb ku-nywa (to drink, to absorb)

The verb *ku-nywa* has the passive form *ku-nywa* (to drink, to absorb), which is very common in language. The form *ku-nywa*, although it looks extended, is in fact monosyllabic. The half-vowel *w* is not considered a vowel. It is, together with the consonants *n* and *y*, considered to form a consonant cluster belonging to the same syllable.

With the search key '*nywa*' we get 13434 occurrences, a bit too much for converting to rich text format. We remove some wrong hits (3).

(3)

```
$ cat-allmat | egrep 'nywa ' | attat | swasent | perl -pe 's/\.\$/. \n/gm'  
| egrep 'nywa ' | egrep -v '(fa|ga|ko|a|gi)nywa ' | wc  
1694 lines
```

The text is small enough for converting it to the rich text format (4).

(4)

```
$ cat-allmat | egrep 'nywa ' | atta | swasent | perl -pe 's/\\.\\$/.\\n/gm'  
| egrep 'nywa ' | egrep -v '(fa|ga|ko|a|gi)nywa ' | text2richtext
```

The script *text2richtext* converts the text into rich text format. This can then be accessed using the accurate search method (5).

(5)

```
$ echo {nywa_V | find-word
```

```
Duniani kuna watu wengine wa_ajabu, yaani jamaa huyu badala_ya kunywa  
pombe kwa starehe zake, eti amekunywa {nywa_V} pombe kwa_ajili_ya  
kuwakarahisha watu wengine ambao hakunywa {nywa_V} nao na ambao wala hata  
hawakumtuma.
```

```
-----  
Ikadaiwa kuwa, Mchodo alifika kwenye bucha ya nyama ya mlalamikaji na  
kuanza kumfanyia fujo kwa kumwaga mwaga pombe aliyokuwa anakunywa  
{nywa_V} kwenye bucha hiyo.
```

```
-----  
Akasema hata_hivyo mtoto huyo aliokolewa lakini wakati amekwisha kunywa  
{nywa_V} maji mengi_kuliko yanavyohitajika mwilini na akakata_roho akiwa  
njiani kupelekwa katika Hospitali ya Taifa ya Muhimbili.
```

```
-----  
Dk Mazala akatoboa pia kuwa kwa mwaka, Mtanzania mmoja hunywa {nywa_V}  
wastani wa lita 26 za maziwa, wakati huko Kenya Mkenya mmoja hunywa  
{nywa_V} lita 86 kwa mwaka na huko Sweden kila raia mmoja hunywa {nywa_V}  
wastani wa lita 200 kwa mwaka.
```

```
-----  
Pius anaongeza kuwa pia mke wake ni jeuri kupindukia halafu ameanza  
tabia za_ajabu ajabu, "namuoa alikuwa manywi {nywa_V} pombe lakini  
siku_hizi anakunywa {nywa_V} pombe ile mbaya tena za bei mbaya" akadai.
```

```
-----  
Baadaye Alasiri ikashuhudia maafande hao ambao watano walikuwa wamevaa  
kiraia, wakimchomoa mtu mmoja ambaye alitambuliwa kwa jina moja la Frank  
aliyekuwa akinywa {nywa_V} na baadaye kuanza kumshindilia masumbwi ya  
mfululizo na kumkata mitama.
```

```
-----  
Aidha, mtu mmoja ambaye alidai kuwa naye katika klabu moja kijijini hapo  
wakinywa {nywa_V} alisema kuwa marehemu hakuwa amelewa kiasi cha  
kushindwa kuvuka katika daraja hilo lakini akaeleza kuwa ubovu wa daraja  
hilo ndilo limechangia kifo cha mzee huyo ambaye ni kipenzi cha watu  
wengi hasa kwa uuzaji wake wa maembe kijijini hapo.
```

```
-----  
Dada wa marehemu Veronica Peter akisimulia mkasa huo wa_kutisha akasema  
hivi : Kaka aliuawa wakati akirejea nyumbani kwake Yombo Dovy akitoka  
kunywa {nywa_V} pombe katika baa moja maeneo ya Tandika, Kilimahewa.
```

```
-----  
Akasema baadhi_ya watu waliokuwa wakinywa {nywa_V} pamoja walieleza kuwa  
siku hiyo baada_ya kunywa pombe aliaga mapema na kutaka kuondoka, lakini  
mara akatokea mtu mmoja ambaye marehemu wanafahamiana naye na kuanza  
kumng'ang'ania akitaka amsindikize, hata_hivyo marehemu hakukubaliana na  
hilo.
```

```
-----  
Alasiri imewashuhudia wachezaji hao wakinywa {nywa_V} maji ya bomba  
waliyokinga kwenye ndoo moja na wote kulazimika kunywa kwa kupokezana
```

kikombe kimoja kinachotumbukizwa kwenye ndoo hiyo baada_ya mmoja kumaliza.

Alisema alikuwa akitoka kunywa {nywa_V} pombe katika baa moja maeneo ya Tandika, Kilimahewa.

Wakati huohuo mkazi mmoja wa kijiji cha Kilindi kilichoko wilayani Mbinga mkoa wa Ruvuma amekufa papohapo baada_ya kupigwa na mwenzake wakati wakiwa wanakunywa {nywa_V} pombe ya_kienyeji nyumbani kwa mama mmoja anayejulikana kama Sofia Ndomba.

Akasema tukio hilo limetokea nyumbani kwa Bi Ndomba mahali ambapo walikuwa wakinywa {nywa_V} pombe ya_kienyeji maarufu kwa_jina la".

Akasema chanzo cha Rose kunywa {nywa_V} sumu hiyo hakijafahamika na wala hakuacha ujumbe wowote.

Akasema baada_ya kijana huyo aliyekuwa hausiboi wa Mama Edda Malamsha, 43, kunywa {nywa_V} dawa hiyo ambayo ni sumu, hali yake ilibadilika ghafla na kuwa mbaya na kulazimika kupelekwa katika hospitali ya Amana iliyoko wilaya ya Ilala ambako madaktari walipigana kiume kuokoa maisha yake lakini ikashindikana.

The total number of the occurrences of the verb *nywa* in the corpus is 1394.

This passive form *ku-nywa* has some extended forms, and we will look at their occurrences below.

2.3 The applicative form *ku-nywea* (to dry up, to shrink, to lose strength)

The search key '*nywea*' has 53 occurrences in the corpus, Surprisingly, all of them are true hits, and no rich text format is needed. Some of them are in (6).

(6)

alishalipwa lakini pesa akazinywea pombe.
aa ya Kinondoni, Je anaweza kunywea chai katikati ya mainzi
mzee huyo atapewa mrija wa kunywea pombe watumiazo wazee ui
ta maji na mbolea, miti ile hunywea na sasa sisi tunachezea
TS M Kunywea aaa! Ndio vugo. Mm.
anga (?), wanabugia, watu wananywea maji, wakubwa wanalala n
SH M Ya kunywea maji.
ani ya IWS, imesema uchumi umenywea tena katika robo ya sasa
mika kuchotea, kuhifadhi na kunywea maji vitakuwa vichafu. M
kwa kutumia chombo safi cha kunywea maji. Katika sehemu za v
, simu za mdomo, vyombo vya kunywea maji, sahani, vijiko, ta
yowahi kuvuta au bilauri aliyonywea maji.
waaajili ya josho na eneo la kunywea maji, badala ya kuwapele
awape fedha za kuwawezesha kunywea pombe.
ingine kitumiwacho na wazee kunywea pombe kiitwacho Mkenge.
afurahisha kuona Marekani wamenywea hadi kumkumbuka Mungu",
kwa nini akimuona nguchiro ananywea na kujificha kichwa chak
a hizo na walizozianzisha walinywea baada ya kugundua kwamba
kebehi. Kilichomfanya Smith kunywea na kukanyaga kiburi chak
na wazazi wake kwa ajili ya kunywea chai.
Pengine wamevitumia katika kunywea pombe

a aina za hirizi, pembe za kunywa dawa na vifurushi vingi

2.4 The causative form *ku-nywesha* (to irrigate, to give a drink)

The causative form *ku-nywesha* occurs in the corpus 57 times. These occurrences can be retrieved with direct string search, and the search result is clean. Part of results is in (7).

(7)

\$ cat-allmat | kwic 'nywesha '

a na Polisi kwa tuhuma za kuwanywesha dawa watu wanaowatuhum
kisha kuwanya nywele na kuwanywesha dawa kwa nguvu watu wa
ngine walikuwa na kazi ya kuwanywesha maji watu waliokuwa wa
ashuka kaja na pombe zake akamnywesha Atendalo, kusudi hadit
ao watoto hao wanashindwa kujinywesha kikawaida, bali wanabi
kukamua maziwa ya mama na kumnywesha kwa kutumia kikombe ki
a pesa, zitawatokea puani. Kumnywesha mtoto wa shule chini y
nya unyama wake huo, uwa ananinywesha pombe na kunionyesha u
dalili zake mnyonyeshe na kumnywesha maji ya dawa. - Degede
Baada ya kumnywesha gongo, Konyagi, bia...
a kufanya kitendo hicho, walimnywesha punda huyo pombe ya go
i mdogo ikiwa ni pamoja na kumnywesha maziwa ya ng'ombe.
Paulo, amekimbia baada ya kukinywesha kichanga hicho sumu ai
alimbali ikiwa ni pamoja na kunywa mifugo.
kubaliana na maombi yake, akamnywesha dawa ya kumtoa jini hi
ini ya miaka 15 kuogelea au kunywa mifugo katika mabwawa
Amnywesha sumu mtoto wa kumzaa m
Bw Mdoe alisema kabla ya kumnywesha sumu mtoto huyo, mtuhu
kumchapa viboko na baadaye kumnywesha sumu aina ya Novatian
a eneo la Mbauda na kisha kuwanywesha oil chafu.
ambaye inadauiwa baadaye walimnywesha pombe kali na kumlawit
bazi hayo kuingia ndani, walimnywesha dawa ya mifugo kwa kut
wenye umri wa miezi 10 kwa kumnywesha vidonge vingi vya dawa
a washtakiwa kizuizini na kuwanywesha sumu kwa nia ya kuhata

The causative form can have also an applicative clitic. There are some such occurrences (8). They all refer to giving drink to animals.

(8)

\$ cat-allmat | kwic 'nyweshea '

mekufa maji katika bwawa la kunyweshea mifugo.
ugaji na ukosefu wa maji ya kunyweshea mifugo, umepelekea ki
kuoga mara mbili kwa siku, kunyweshea mifugo, kufulia au ku
kutumika kama [148] maji ya kunyweshea wanyama na kumwagilia
esho, au kuchimba bwawa la kunyweshea mifugo, au kuwasaidi
abati wa mabwawa ya maji ya kunyweshea mifugo.
a kujenga maeneo maalumu ya kunyweshea mifugo na upandaji mi
shuleni, pamoja na bwawa la kunyweshea mifugo.
ni kutenga eneo maalumu la kunyweshea mifugo au josho, kish
shuleni, pamoja na bwawa la kunyweshea mifugo.

2.5 The stative form *ku-nyweka* (to be drinkable)

There are also some cases of the stative form *ku-nyweka*. Also, these can be retrieved directly from text (9).

(9)

\$ cat-allmat | kwic 'nyweka '

ani, sisi pale Amana, bia zinanyweka sana, hata DDC Kariakoo
ata DDC Kariakoo nako bia zinanyweka sana, sasa huko kwenye
anayo kama Mnero. Pombe hii hunyweka pasipo kificho chochote
o. Hiki ni kinywaji ambacho hunyweka na watu wote akina baba
ngenezwa kwa wingi sana na inanyweka sana katika maeneo meng
<LI-NYO> *pombe ilinyweka vya kutosha, ikaonekan
i nyama na pombe nyingi zilizonyweka usiku kucha na siku ili
ondoo maridhawa ; na pombe ilinyweka hata ikabaki.\$
<FAR> *tena pombe zilinyweka na ngoma zikachezwa kut

3 The verb *ku-la* (to eat)

The verb *ku-la* has some extended forms, such as *ku-lisha*, *ku-lika*, and *ku-liwa*.

The form *ku-liwa* (passive) belongs to another category than the other extended forms, because it does not cause change in meaning as the other forms do. However, morphologically it is similar with other extended forms, because it makes the stem bisyllabic.

3.1 The causative form *ku-lisha* (to feed)

With the search key 'lisha ' we get 17359 occurrences. Some of them are in (10).

(10)

\$ cat-allmat | kwic 'lisha '

Kenya, amerejea nchini kukamilisha mipango ya usajili na kl
andaliwa kwa ajili ya kuutambulisha mtindo wa Achimenengule,
sema kitendo hicho kimewadhalilisha sana na kujiona unyonge
o kikatamia muda huo kuwatambulisha wagombea wote wa mitaa n
o wa vyama hivyo juu ya kuhalalisha matokeo ya michezo yote
o 3-0, katika mchezo wa kukamilisha ratiba wa Ligi kuu ya Mu
KCMC ambaye ajipenda kujitambulisha kwa kutaja wadhifa wake
moja wa eneo hilo aliyejitambulisha kwa jina moja la Mohamed
kwenda rumande baada ya kukamilisha masharti ya dhamana. Kes
Tume ya Jiji ambazo zimelibadilisha sura ya Jiji. Wiki ya Ji
ine unategemea kuazimia kuwasilisha maombi rasmi kwa Kamati
u Dk. Sengondo Mvungi kuwawakilisha kudai mafao yao litakuwa
atu... lakini mbona mnanidhalilisha bure? Akahoji Dk. Salmin
akimtuhumu kuwa anataka kubadilisha katiba ili aweze kupata
iano ya Internet katika kuwasilisha habari zinazoenda na wak
Raoul Shungu kutangaza kukamilisha zoezi la mchujo wa makip
Wazungu, pia anategemea kuwasilisha hoja binafsi mbele ya ki
aelekeza wanachama wake kuwasilisha kwenye Baraza la Nyumba
sha watoto kama nyanzo ya kuzalisha mali katika jamii husika
ji wa mashindano hayo waliwawalisha washiriki bukta maalum b
heshimiwa Spika, naomba kuwasilisha Matoleo ya Gazeti la Ser

fedha zaidi ili waweze kukamilisha kazi hiyo lakini tangu w
dia wananchi wa Idukilo kukamilisha kazi hiyo.
wa Idukilo, ili waweze kukamilisha vizuri kazi ambayo wamei
dwa na Wizara ya Ardhi imekamilisha kazi yake na kuwasilisha
ekamilisha kazi yake na kuwasilisha taarifa yake Serikalini.
opment Program (KIDEP) imekamilisha kazi zifuatazo katika ma
vile wataalamu wetu waliwaemilisha baadhi ya wananchi katik

There is no correct hit in this sample. Therefore, we must use constraints for getting a more reduced text (11).

(11)

```
$ cat-allmat | kwic 'lisha ' | egrep -v  
'(wi|za|va|di|si|mi|hu|jum|la|bu|ju|waki|ti|hi|hali)lisha ' | wc  
737 occurrences
```

Now the text is small enough for converting it to rich text. Then we use the accurate search method. There is a total of 376 true hits. Part of result is in (12).

(12)

Katika ujumbe wake Baba Mtakatifu alisema kuwa dhamira ya mwaka huu ya siku hiyo "wanalisha {lisha_V} Ulimwengu" unafanya mtazamo wa FAO kuelekea kwenye mapambano ya kiutu dhidi_ya njaa na utapiamlo.

Alisema kuwa anatumaini siku hii ya chakula duniani itafanya dunia iwatambue wanawake siyo tu wanaopaswa kulisha {lisha_V} ulimwengu bali kama wanaoleta amani na tuni za_kiutu.

Askofu Chengula alisema, mtoto kumlisha {lisha_V} chakula kisichofaa ambacho baba yake amekataza asipewe ni kosa.

Papo_hapo tunapenda kuwapongeza wale ndugu ambao wametambua kabisa umuhimu wa kilimo na wakawa tayari kuwalisha {lisha_V} hao walio wavivu.

Kwa kweli kwa upande wangu ningependa tufahamishwe maana_halisi ya mambo hayo na tufundishwe Biblia vya_kutosha ili tuwe watu ambao tunaifahamu Biblia vizuri ili ieleweke kuwa Kanisa Katoliki lina uelimishao mzuri kwa waamini wake kwa_maana "wake huwalisha {lisha_V} vizuri kondoo wa Bwana pasipo kuwapoteza".

Ni jambo ambalo linaumiza mno mtu mmoja kwa mshahara mdogo kabisa aweze kuwatunza na kuwalisha {lisha_V} kundi kubwa sana la ndugu na jamaa.

Lakini wengi kwa_sababu_ya kutokutambua jambo na pengine kutokana_na uzembe huona kuwa kuwalisha {lisha_V} na kuwatunza hao viongozi wa dini ni kazi ya hiari, kumbe sivyo.

Ni wajibu wa kila mwamini wa kila dhehebu na dini kumtunza, kumlisha {lisha_V} na kumhudumia kwa namna mbalimbali huyo kiongozi.

Mwamini asione kuwa ni kitu cha hiari kumtunza na kumlisha {lisha_V} kiongozi au mchungaji wake wa_kiroho.

Viongozi wetu waheshimiwa na wachungaji tunawategemea kulisha {lisha_V} kondoo wa Bwana; sasa mnapowashawishi vijana kuchoma nyumba za watu au

kupiga_makelele ibadani na kutukana viongozi na watu wanaowazidi umri,
mnatufundisha nini? ' alipendana sana na Bi.

Kizee huyo na mara nyingi alimsaidia kumlisha {lisha_V} na kumsafisha
paka huyo, bila_shaka hilo limechangia' Paka huyo hivi_sasa anaishi na
familia ya Sophie na binti huyo.

Akifafanua maendeleo hayo kwa_upande_wa kiroho Askofu huyo alisema kuwa
ni wajibu wao kuwalisha {lisha_V} neno la Mungu pamoja_na kuwapatia
masakramenti.

Pembeni mwa mnara wa ' Square wapo wachuuzi wadogowadogo wanaouza
chakula cha njiwa kwa watalii wanaotembelea mnara huo karibia kila_siku
iwapo wangelipendelea kuwalisha {lisha_V} njiwa hao werevu.

Kwa muda mrefu toka teknolojia ya ufugaji wa_kisasa wa ndege na wanyama
ulipoanza duniani imekuwa ikiwawia vigumu wataalam kujua ni namna gani
wataweza kuwalisha {lisha_V} kwa_njia_ya asili baadhi_ya wanyama wachanga
ambao mara nyingi hutegemea sauti za mama zao ndipo waweze kupata morali
ya kula.

Kwa_kuwa ni ishara zinazowafundisha waamini, kwa_upande_mmoja zinadai
imani na kwa_upande_mwingine zinalisha {lisha_V} imani yenyewe kwa maneno
na matendo ya Ibada, tena zinaimarisha na kudhihirisha Imani hiyo.

Hayo yalisemwa hivi_karibuni na Mchungaji Raulent Magike wa Kanisa la
Full Gospel Bible Fellowship (FGBF), wakati akiwalisha {lisha_V} Neno la
Mungu kwa waamini walioshiriki ibada ndani_ya kanisa hilo, kando_mwa
barabara ya Cogefer iliyopo Ronsoti mjini Tarime.

Licha_ya kuwafariji, Askofu amewahimiza mapadre kuwapa wagonjwa huduma
za_kiroho kwa kuwapaka mafuta na kuwalisha {lisha_V} Chakula cha Bwana.

Nilimpikia mwanangu vizuri nikamlisha {lisha_V} akashiba.

Hivi_sasa Tanzania inashindwa hata kujilisha {lisha_V} yenyewe, achilia
mbali kuuza mazao nje.

3.2 The stative form *ku-lika* (to be edible)

The stative form *ku-lika* is difficult to find, because the string *lika* is a common extension in the stative form of many verbs. The search key 'lika ' results in a large number of hits (13).

(13)
\$ cat-allmat | egrep 'lika ' | wc
10001 occurrences

An extract of results is in (14).

(14)
tua 3 za utekelezaji na kukamilika kabla ya mwisho wa mwaka
sema mpango huo unaweza kukubalika kwa majadiliano lakini vi

ufanya uchunguzi ambao unakubalika kwa faida ya Iraq na ulim
Siku hiyo muungano huo utaihalika Cyprus na nchi nyingine k
NATO yazialika nchi saba uwanachama.
fa ya Magharibi, NATO, wamezialika nchi za saba za zamani za
hami ya magharibi NATO wamezialika nchi sabaa za kambi ya za
Kadhalika kikao maalum cha bunge la
aliokuwa wakiwasafirisha kadhalika na mahala ilipoondokea me
muajiriwa wa Iraq anayeshughulika ghala hilo kuandamana nao
hala hilo kuandamana nao kadhalika waandishi wa habari wamez
kimataifa ni jambo lisilokubalika na ni kitendo cha kigeu k
i kuna sababu inayozidi kukubalika ya kuamini kwamba Al Qaeda
kimataifa ni jambo lisilokubalika na ni kitendo cha kigeu k
Kadhalika vituo vilivyokuwa vimefun
aziri mkuu Mari Alkatiri kadhalika nyumba mbili za ndugu zak
ajumba kadha ya serikali kadhalika magari kadha yaliunguzwa
Reinhard Bütiker na Angelika Beer badala ya Claudia Ro
sika na mgogoro huo hali kadhalika na Waasi wataalikwa kuhud
sika na mgogoro huo hali kadhalika na Waasi wataalikwa kuhud
Uturuki yatategemea hali kadhalika maendeleo ya rekodi ya nc
amesema kuwa Iran imeamua kualika pia maafisa wa shirika hi
KOPENHAGEN: Hivi sasa imekamiliika ile mipango ya kuongezewa
OPENHAGEN: Kuanzia leo imekamiliika ile mipango ya kutanuliwa
a serikali ya Tel Aviv kuwa walika kujipenyeza Israili kwa k
ansa AFP, makubaliano yamekamiliika japo ni magumu kidogo.
i kinahitajika baada ya kubadilika hali ya mambo nchini C&oc
e waziri mkuu Tony Blair kuwaalika viongozi wa Palestina kwa
Kadhalika jeshi litaendelea kupamba

The extract does not have true hits. We constrain the result for finding true hits (15).

(15)

```
$ cat-allmat | kwic 'lika ' | egrep -v  
'(ha|di|hau|ba|mi|ui|bu|du|hu|ua|aa|li|ka|pi|mu|hi|ti)lika ' | wc  
542 occurrences
```

When we convert the text into rich text format and carry out search, we get a total of 10 hits (16).

(16)

Kamanda Tibaigana akasema hivi_sasa vijana wake wanaendelea kulika
{lika_V} gari hilo, huku wakimshikilia dereva Omari Mohamed, ambaye
ataisaidia polisi kumsaka dereva halisi Saidy Hussein ili awaeleze
ilikuwaje gari hilo la watu wakabidhiane kiholela holela.

Idda Msangano ambaye ni mjumbe wa kamati ya chama hicho akaanza
kumrushia madongo mwenyekiti wake mbele_ya viongozi wa manispaa na
watalaam wa kilimo, ushirika na masoko walioko kwenye ziara kutembelea
vijiji vinavyolika {lika_V} korosho katika wilaya ya Ilala.

Majeshi ya Israili yamewauwa leo_asubuhi raia 3 wa kipalastina, ikiwemo
wanaharakati 2 wa chama cha itikadi kali cha HAMAS, wanaodaiwa na
serikali ya Tel Aviv kuwa walika {lika_V} kujipenyeza Israili kwa kupitia
karibu_na mji wa Beit Hanoun, kaskazini mwa Ukanda wa Gaza.

Jibu: Kunoka ni kitendo cha vyuma katika injini kupata joto kali sana na kulika {lika_V} sana mpaka kupandana.

Mganga aliona wazi kitumbua kilikuwa kimeingia mchanga hivyo hakitoweza kulika {lika_V} tena na hivyo akaamua kuuweka ukweli wote bayana kwa mteja wake.

Alisema pampu zote nne zimelika {lika_V} mno kutokana_na msugurano na mtikisiko mkubwa wa_kila_siku.

Vyanzo vya_kuaminika kutoka Wizara_ya_Afya vilidai kuwa malalamiko hayo yalifikishwa wizarani na uchunguzi ukafanyika lakini sukari hiyo inaendelea kulika {lika_V} bila kufungiwa wala kuwatahadharisha "hilo wanaliyua wakubwa lakini wananyamaza, pengine uwekezaji na ukusanyaji mapato ni muhimu zaidi kwa kipindi hiki," alisema afisa wa wizara hiyo aliyeomba jina lake lisitajwe.

"uhakika kuwa leo kutalika {lika_V} au la, nafanya biashara hii pesa ninazopata ni ndogo sana, hazitoshi kununulia mahitaji, mtoto wangu yule anaitwa Mkala yapata wiki sasa anakojoa damu, nimeambiwa kuwa ni kichocho, nimepeleka Hospitali nikaandikiwa dawa mpaka leo sijaweza kuinunua", mama huyo ameeleza huku akimuonesha mwandishi cheti cha Hospitali moja binafsi iliyo eneo hilo.

Pia ndizi huiwa bila hata kukomaa, tunda la mgomba ulioathirika huwa gumu sana na hushindikana kulika {lika_V} iwe_na binadamu au mnyama.

Mathalan, jino limelika {lika_V} na wadudu au kuvunjika na unahitaji kuweka jino lingine utatakiwa kulipa sh 60,000 au zaidi vinginevyo utaendelea kuteseka na hilo jino kwa maumivu, kuvimba uso na hatimaye kujiweka karibu_na hatari ya kupata saratani.

4 The verb *ku-fa* (to die)

The verb *ku-fa* has some extended forms, such as *ku-fia* (to die on behalf of), *ku-filia* (to die on behalf of), *ku-fisha* (cause to die), and *ku-fiwa* (to experience a death). It is interesting to note that although the verb *ku-fa* is an intransitive verb, it can have a passive form *ku-fiwa*.

4.1 The applicative form *ku-fia* (to die on behalf of)

The search key '*fia*' produces 2697 hits. Some constraining of the text is in place (17).

```
(17)
$ cat-allmat | kwic 'fia' | egrep -v '([Mm]a|ko|ho|si|ra|[Ss]o|fi)fia'
| wc
427 occurrences
```

The text will be converted into rich text format (18).

(18)

```
$ cat-allmat | egrep 'fia ' | egrep -v '([Mm]a| ko|ho|si|ra|[Ss]o|fi) fia  
' | atta | swasent | perl -pe 's/\.\\$/.\n/gm' | egrep 'fia ' |  
text2richtext
```

Now we can use the precise search option. Part of total results (540) are in (19).

(19)

\$ echo {fia_V | find-word

```
Mwalimu afia {fia_V} kituo_cha_basi.  
-----  
Ajali yatokea alipofia {fia_V} mtoto wa Dandu.  
-----  
Amewataja watoto wawili walioungua kwenye moto huo kuwa ni Shukuru  
Lucas, 7, ambaye alikutwa amefia {fia_V} kwenye sinki la kuogea  
lililokuwa bafuni chumbani humo na mtoto wa marehemu mdogo wake Tunu  
Luambano, 4, ambaye alikutwa karibu na mlango wa kuingilia bafuni kichwa  
chake kikiwa kimepasuka vipande na mguu mmoja ukiwa haupo.  
-----  
Siogopi amefia {fia_V} katika hospitali ya wilaya ya Ilala, Amana  
alikuwa amelazwa juzi baada_ya BP kumpanda.  
-----  
Utingo afia {fia_V} ndani_ya tenki baada_ya kukosa hewa.  
-----  
Siogopi alifia {fia_V} katika hospitali ya wilaya ya Ilala, Amana  
alikuwa amelazwa baada_ya BP kumpanda.  
-----  
Fundi afia {fia_V} kazini.  
-----  
Amefia {fia_V} katika chumba cha wagonjwa mahututi Muhimbili.  
-----  
Baadhi_yao wameapa kufia {fia_V} mabondeni wakisema kuwa hawaoni sababu  
ya kuhama.  
-----  
Mwanamume afia {fia_V} gesti Dar.  
-----  
Na mtoto afia {fia_V} katika beseni la maji.  
-----  
Mwanamume afia {fia_V} stendi ya basi Mlokole afia {fia_V} bwawani  
akiimba pambio.  
-----  
Mlinzi akutwa kafia {fia_V} kwenye lindo.  
-----  
Kijana wa Kigogo Gerald Joseph, 32, anayeishi kule Mchikichini amefia  
{fia_V} jela kabla hata kesi yake haijaanza kusikilizwa.  
-----  
"hakimu, mshitakiwa Gerald aliyeshitakiwa mbele_yako kwa kosa la wizi wa  
nguo amefia {fia_V} gereza hivyo itabidi Heur kupitia mahakama yako  
tukufu, mlalamikaji afahamishwe kuhusu taarifa hizi," akasema askari  
Peter.  
-----  
Ikadaiwa kuwa kabla hata hajapumua vizuri uraiani mshitakiwa Gerald  
akakamatwa na kufikishwa mahakamani kwa shitaka hilo la wizi na ndipo  
akafia {fia_V} jela siku chache kabla_ya kesi haijaanza kuzikilizwa  
mahakamani hapo.  
-----
```

Kijana huyu kafia {fia_V} nje_ya lango la hospitali.

Habari zinasema Ali alifia {fia_V} nje_ya lango la Hospitali ya Lugalo, Jijini, alipokwenda kuchukua dawa za ugonjwa wa Kifua_Kikuu.

The applicative form *ku-fia* can be used in a number of contexts, not only on behalf of someone or something. Above we see that it is often used in news headings.

The basic form *ku-fa* is often used in the same context as the applicative form. Examples in (20) were extracted from the text that contained applicative forms.

(20)

Akasema mwenzao mmoja tayari amekufa {fa_V} kwa kukatwa panga la pajani hadi mfupa kuvunjika na kuwa nje na kwamba alifia njiani wakati anapelekwa katika hospitali ya Amana, na majeruhi watatu wapo kituoni.

Benadeta Lutumo, alisema marehemu Loti alifia hospitalini wakati wengine walikufa {fa_V} katika eneo la ajali.

Qaresi alisema katika tukio hilo walikufa {fa_V} Mahabusu 17 ambapo 14 walifia ndani_ya chumba cha mahabusu na Watatu walifia katika Hospitali ya Serikali ya Rujewa Wilayani Mbarali na wengine 15 walitibiwa na kuruhusiwa kwa dhamana kwani bado ni watuhumiwa na wawili bado wanaendelea na matibabu katika Hospitali hiyo.

Polisi wamesema pia watu waliokufa {fa_V} kutokana_na mapambano ya watu hao wanaoaminika kuwa wafuasi wa chama_cha_upinzani cha CUF na polisi Jumamosi iliyopita wamefikia 22 hadi jana, baada_ya wengine watatu kufia nchini Kenya.

There is also a double applicative form *ku-filia*. It has four occurrences (21).

(21)

\$ cat-allmat | kwic 'filia '

oja kaja hapa, kufika hapa akafililia hapa. Sasa mtu alipofili akafililia hapa. Sasa mtu alipofililia hapa ikawa kama ni mahal wana Wetu Yesu Kristo kwa kutufilia Msalabani ili aweze kutu
<USH> Watemi wamefilia, akina Bwana Msosi,

4.2 The causative form *ku-fisha* (to cause to die)

The search word 'fisha ' produces 1612 occurrences. This text could be converted to rich text, but it is more economical to use constraints first for reducing wrong hits. This is done using the script in (22).

(22)

```
$ cat-allmat | egrep 'fisha ' | egrep -v  
'(sa|oo|[Ss]a|fi|ro|ai|sani)fisha ' | atta | swasent | perl -pe  
's/\.\$/.n/gm' | egrep 'fisha ' | wc
```

131 occurrences

This reduced text can be converted to rich text for applying precise search. Part of results is in (23).

(23)

Ubora wa maji na ushafisha {fisha_V} wa maji machafu nchini Ujerumani unajikuta kileleni.

Kwa_nini kujikalifisha nafsi na hali faradhi ya Hija ni kwa wale tu wenye_uwezo? Ambao malaika waliwafisha {fisha_V} hali wamejidhulumu nafsi zao (kwa maasi yao).

Ndiye atakayenifisha {fisha_V} na kisha atanihuisha.

anasisitiza hili kwa kusema "bada ya hapa tutawafisha {fisha_V} na kisha tena siku ya Qiyama tutawafufua".

Uamuzi huo wa CCM wa kuwaamini wananchi na kutokuwafisha {fisha_V} hatua yoyote muhimu ya mageuzi imesaidia sana kuleta hali ya utulivu na ya kuyaelewa mageuzi na kyaongoza kwa usalama.

Mambo haya (utamaduni na mazingira) huchangia sana katika kuikuza au kuifisha {fisha_V} lugha.

Pamekuwa_na hofu kuwa maandishi yakitumiwa sana, yatafisha {fisha_V} fasihi_simulizi; au angalau kuifanya isiwe_na nafasi kubwa katika jamii.

Hiki pia ni kitu kingine ambacho huweza kulifisha {fisha_V} lengo la mwandishi.

Litakuwa_ni jambo la_upuuzi kabisa kama yeye atatumia lugha ambayo haitawasilisha ujumbe wake kwa_sababu kufanya hivyo ni kulifisha {fisha_V} lengo lake.

Mfumo wa elimu ya_kikoloni pia ulisaidia sana kufisha {fisha_V} sanaa za_jadi.

Akawapatanisha wote_wawili na Mungu katika mwili mmoja, kwa_ajili_ya msalaba, akiisha kuufisha {fisha_V} ule uadui kwa huo msalaba,"

Lakini jambo la_msingi katika maisha ya_kitawa ni kudumisha siku zote kule kujiaminisha kwa Kristo kama kiini cha ubatizo kwa_njia_ya toba na kujifisha {fisha_V} nafsi.

Baadhi_ya sababu zinazochangia kushuka kwa_kiasi_kikubwa cha idadi ya watoto wanaozaliwa, kama ilivyotajwa hapo_juu ni kufisha {fisha_V} kizazi, uzuiaji na utoaji_mimba.

Wanafanya hivyo huku wakisahau kwamba, wakubwa wao na wao_wenyewe wamejifisha {fisha_V} hapo walipo na kimsingi sisi wanaotulenga wakituona kuwa ni wasaliti au maadui hatuna mkono kabisa katika kukwama, kupwaya au kushindwa kwao.

Tamaa hufisha {fisha_V} hisia muhimu za huruma ya_kibinadamu na kumfanya mtu ashindwe kujitawala.

4.3 The passive form *ku-fiwa* (to experience a death)

The passive form *ku-fiwa* is used in cases where death has been experienced in a family or a social group.

The search key 'fiwa ' produces 1235 hits. Constraints can be applied for reducing the size (24).

```
(24)
$ cat-allmat | kwic 'fiwa ' | egrep -v '(m|si|ri|ho)fiwa ' | wc
418 occurrences.
```

This is small enough for converting to rich text (25).

```
(25)
$ cat-allmat | egrep 'fiwa ' | egrep -v '(m|si|ri|ho)fiwa ' | atta |
swasent | perl -pe 's/\.\$/.n/gm' | egrep 'fiwa ' | text2richtext
```

The verbs can now be retrieved using the accurate search method (26).

```
(26)
Nilikuwa kimya kwa muda mrefu katika muziki tangu nilipofiwa {fiwa_V} na
baba yangu, sasa nimejiondoa rasmi Tam Tam, na kesho nitazungumza na
waandishi_wa_habari kuvunja ukimya huo na kueleza hatma yangu katika
muziki," alisema Muumin.
-----
Mzee huyo ambaye pia amefiwa {fiwa_V} na mkewe amemuomba mwanee huyo
amwachie nyumba yake kwa_kuwa ameshazeeka na hivyo hastahili kuhangaika
mitaani.
-----
Ukiamua unaondoka sijui unakwenda mpangaji wako kafiwa {fiwa_V} na mtoto
wake ambaye kwa_kweli si ubinadamu na utamaduni wetu, basi ujue kwamba
zile saa ulizokwenda kumsaidia mpangaji wako zinakatwa.
-----
Lakini leo_hii tuna Mbunge mwenzetu wa Kigoma amefiwa {fiwa_V} na mama
yake, kapata taarifa ya kifo tangu juzi (Mheshimiwa Mayonga).
-----
M Halafu pia kuna malipo ambayo yule aliyofiwa {fiwa_V} nasikia hu...
Heur hulipa kitu.
-----
Lakini yule aliefiwa {fiwa_V} yule, hana ruhusa kufanya jambo lingine
lo_lote Alimpowesha mumewe hatari, hakujua tu kusema: "nimefiwa {fiwa_V}
na mama yangu kwa raha zake.
-----
Itanikuta cho_chote sasa kama ni kweli na inakuwa inaweza kutokea namna
iyo ikawa ikakutokea utafiwa {fiwa_V} na mtu yo_yote yule.
-----
Mana kafiwa {fiwa_V} uyo.
-----
Ndugu wa marehemu wamemlaumu Rais Obasanjo kwa kutojali sana baada_ya
kuitembelea sehemu ilipotokea ajali hiyo na hakuwa_na wasaa wa kuzungumza
au hata kuwapa_pole waliofiwa {fiwa_V} ambao walikuwa wakiomboleza.
-----
```


Ambrose Rachier kwa_mfano anasema wengi wa watoto wanaofiwa {fiwa_V} na wazazi wao, ni wa umri wa_chini mno na hawawezi kurithi mali.

Imetajwa kwamba, jumuiya ya AL AQSA imekuwa ikisaidia familia zilizofiwa {fiwa_V} na watu wanaofanya mashambulio ya_kuuwa watu wengine kwa kujitoa_mhanga.

5 The verb *ku-ja* (to come)

The verb *ku-ja* has such extended forms as *ku-jia* (to come to something), and the passive form *ku-jiwa*.

5.1 The applicative form *ku-jia* (to come to something)

The search key 'jia ' produces 21478 hits, far too many for surface search. Using constraints, we get the kind of result shown in the extract (27).

(27)
\$ cat-allmat | kwic 'jia ' | egrep -v '([Nn]|lo|ra|r|ru|ta)jia '
Kichwani mwangu ikanijia kumbukumbu ya maneno ya Ba
zi msomaji wa safu hii inayokujia siku kama ya leo, lengo li
safu hii maridhawa ambayo hukujia kila ifikapo siku ya Ijuma
CWT wamjia juu diwani anayewatisha
ya ya Dodoma Mjini (CWT) wamemjia juu Diwani wa Kata ya Chah
akini tukishavuna ndiyo wanatujia tena mara nyingine hadi na
ipo, mwenyekiti wa kijiji alimjia juu huku akimtishia na ili
ua nyingine, wabunge hao waliijia juu TAKUKURU kwa kutoa cha
ya Busati la Wikiendi inayokujia kila ifikapo siku kama ya
hizi za maisha yetu, zinazokujia kila Alhamisi.
UF na NCCR-Mageuzi navyo vilimjia juu Zitto vikidai anatafut
o, John Mnyika (CHADEMA), amemjia juu Rais Jakaya Kikwete ak
Inanijia picha yako kila mara ninap
likaribia jiwe lile wazo likamjia kichwani mwake kuwa 'akili
moyo wangu roho muumbaji alinijia na kuniambia saa yako ya k
a karatasi yeye anatumia teknolojia ya kisasa ambayo si lazima
u ya 'Vunja vunja ambayo hukujia kila Ijumaa ikiwa maalumu
Inanijia picha yako kila mara ninap

Most of hits are correct ones, and we can convert the text into rich text form (28).

(28)
\$ cat-allmat | egrep 'jia ' | egrep -v '([Nn]|lo|ra|r|ru|ta)jia ' | att
| swasent | perl -pe 's/\.\/\\$/\n/gm' | egrep 'jia ' | text2richtext

Part of clean result is in (29).

(29)
\$ echo {jia_V} | find-word
Katika mazingira ya siku zile, wakati ambao uhuru wa watu binafsi
kujiunga katika vikundi mbalimbali ulikuwa umebanwa mno, inawezekana yako
masuala ambayo hayakuwajia {jia_V} watu kichwani.

Kwa lugha nyingine, ujumbe unaotujia {jia_V} ni kwamba, kuna haja_kubwa ya kampeni ya elimu ya vijana dhidi_ya janga la ukimwi kuelekezwa zaidi mashuleni, ambako vijana wengi ndio wako huko.

Walipokaribia kufika Badri ikawajia {jia_V} khabari na kuiona ikhlaaswi yao.

Hapo_ndipo ukawajia {jia_V} msaada kutoka mbinguni, pangoni Hiraa, huenda pengine Jibril atamjia {jia_V} tena, lakini wapi hakumuona.

Wakati Tume iliposafiri kote nchini au ilipokaa katika makao yake makuu ambako makundi yenye mpango ya aina zote yaliwajia {jia_V} ili kuwasilisha memoranda zao, masuala kadha_wa_kadha yaliibuka kwa_uwazi mno.

Walipujia wagoma, mmoja aacha_kazi Barazani kwake ndipo alipokuwa akisambaza habari za matukio ya_kisiasa, habari ambazo zikimjia {jia_V} kana_kwamba yeye ni simaku.

Alipoingia Mwalimu nilimwendea naye alikuwa akinijia {jia_V} mimi.

Tulipomuacha alinijia {jia_V} rafiki yangu mwingine wa muda mrefu Ronnie Mutebi, Kabaka wa_sasa wa Buganda.

Ronnie alinijia {jia_V} kwa shauku : "nitambulisha kwa Mwalimu".

Siyo uongo kwamba, habari alizonazo zimemjia {jia_V} "na kwa urahisi" kuliko kijana aliyekua miaka ya 1965-1980.

Siyo uongo kwamba, habari alizonazo zimemjia {jia_V} "na kwa urahisi" kuliko kijana aliyekua miaka ya 1965-1980.

Madereva waijia {jia_V} juu Sumatra Madereva waijia {jia_V} juu Sumatra Chadema yamjia {jia_V} juu Tendwa Wanaharakati, wanasiasa waijia {jia_V} juu polisi Madereva waijia {jia_V} juu Sumatra NAIBU Waziri katika Ofisi ya Waziri_Mkuu, Tawala za Mikoa na Serikali za Mitaa Agrey Mwanri, amemjia {jia_V} juu Mhandisi wa Wilaya ya Kilolo mkoani Iringa, Atu Mwaipya, kuuagiza uongozi wa mkoa huo kuchunguza vyeti vyake, akimwandikia barua ya onyo kwa madai ya_uzembe.

Arobaini zikitaka kukujia {jia_V} hazizuiwi na lolote.

Mradi huo unakujia {jia_V} wakati hali ya usalama ikiendelea kudorora nchini, huku serikali ikiweka juhudi za kuwahakikishia wananchi usalama.

Maana hapo mambo ya walaghai wa pale kijijini yalikuwa yanamjia {jia_V} kichwani mwangu.

Suala la_kwamba baadhi_ya wanawake hupoteza maisha wanapotahiriwa, Wamaasai wanasema haijawahi kutokea mwanamke akafariki kutokana_na tohara, bali wao wanaamini kuwa kifo kinaweza kumjia {jia_V} mtu wakati wowote bila kuangalia ni wakati_gani.

In all, the verb *ku-jia* occurs in the corpus 273 times.

5.2 The passive form *ku-jiwa*

With the search key '*jiwa*' we get 8256 occurrences. With the script in (30) we constrain the text and convert the reduced text to rich text format.

```
(30)
$ cat-allmat | egrep 'jiwa ' | egrep -v '(ra|ho|[Nn]|hita|ri|ha)jiwa ' |
atta | swasent | perl -pe 's/\\.\\$/.\\n/gm' | egrep 'jiwa ' | text2richtext
```

The search can be done using the accurate search method. Part of results are in (31).

```
(31)
$ echo {jiwa_V|find-word
Mlalamikaji alidai baada ya kufanya hivyo na kuondoka makaburini,
alijiwa {jiwa_V} na wazo kwamba ametapeliwa.
-----
Viongozi kujifunza mara nyingi kama Mbunge, utajiwa {jiwa_V} na mtu
anakuambia hivi na hivi na hivi.
-----
Unakuta mfanya biashara muuza klabu au muuza duka anajiwa {jiwa_V} na
wakusanya kodi.
-----
Mkutano wa maendeleo wa idadi ya watu uliofanyika huko Cairo, Misri
(1994) ulihitimishwa kwa kusema kuwa ukaujiwa {jiwa_V} idadi ya watu
uende sambamba na maendeleo.
-----
Kwanza inapasa kujaribu kumshawishi mtoto mchanga awe na shauku ya
kutambaa, hapo mtoto hujiwa {jiwa_V} na nguvu ghafla ya silika kama wale
watoto wanavyojitolea kujiunga na michezo ya wenzao, ambao hujitupa ndani
bila kulazimishwa, si vizuri kwa wazazi kumlazimisha mtoto mchanga
kutambaa.
-----
Kutokana na tunayoyaona na kuyasikia tunajiwa {jiwa_V} na maswali
mbalimbali.
-----
Myigwe aliridhika na maisha yake, alitamani kujiwa {jiwa_V} na mgeni
kutoka nchi nyingine.
-----
Graca anasema ni wakati walipokuwa wanazungumzia masuala ya kisiasa,
ndipo Mandela alipohisi msisimko wa aina fulani na kujiwa {jiwa_V} na
mawazo ya kumpenda.
-----
```

We note that the passive form *ku-jiwa* occurs most often in the construction *ku-wa na*. In all, the passive form *ku-jiwa* occurs 48 times.

6 The verb *ku-pa* (to give)

The verb *ku-pa* is a ditransitive verb, and it often occurs in constructions with direct and indirect object. It has such extended forms as the reciprocal form *ku-peana* (to give to each other) and the causative form *ku-pasha* (to send, to distribute).

6.1 The reciprocal form *ku-peana* (to give to each other)

With the search key 'peana ' we get 390 hits, and all of them are correct. We do not need precise search method here. Part of results are in (32).

(32)

\$ cat-allmat | kwic 'peana '

mea na kuwaonya wasithubutu kupeana	madaraka kwa kuwa wao ni
tua, wanaogopana kwa kuwa walipeana	uongozi kwa fedha, kumbe
fu kama Uwanja wa Kuchonga, kupeana	changamoto za kimichezo,
wiki iliyopita, si vibaya tukipeana	dondoo kilichojiri.
mekuwa ni sehemu ya sifa za kupeana	vyeo, rushwa inanuka kil
mfumo wa kisayansi zaidi wa kupeana	rushwa kwa njia za mtand
wenzao shele kwa rushwa za kupeana	kwenye bahasha za khaki,
kubariki vizuri vitendo vya kupeana	rushwa bila woga na vizu
Na ili watu waweze kupeana	rushwa bila wasiwasi kil
wa na mfumo wa kisayansi wa kupeana	pesa, walitoa rushwa si
umatatu nyingine tukikutana kupeana	changamoto za kimichezo,
kimichezo, lengo likiwa ni kupeana	changamoto za kimichezo
wiki iliyopita, si vibaya tukipeana	dondoo kilichojiri.
nambeza na kugeuza mfumo wa kupeana	rushwa kwa njia ya mtand
ipa wao fedha hizo, kwani walipeana	fedha hizo na Twite kihu
a kuwa wawe wapole, kwani walipeana	fedha hizo kihuni. Kiten
ada ya kubaini watu wengi wanapeana	taarifa kwa njia ya ujum
katika kujengeana uwezo na kupeana	uzoefu.
ni bado madereva wamekuwa wakipeana	ishara, kuelezana polisi
shi hilo na wananchi katika kupeana	taarifa za uhalifu, unaj
nja wa Kuchonga, tunakutana kupeana	changamoto za kimichezo,
ya bendi hizo, wanamuziki walipeana	zamu ya kukaa kwenye mat
ni bado madereva wamekuwa wakipeana	ishara, kuelezana polisi
likuwa hivi: "Mutongolya, ebu peana	stori. Nasikianga kwenyu

6.2 The causative form *ku-pasha* (to send, to distribute)

The causative for *ku-pasha* is derived from the basic form *ku-pa*, but it has become a verb of its own, and it has also its own extended forms. Here we examine only the extended form *ku-pasha*.

Part of results of the search key 'pasha ' are in (33).

(33)

\$ cat-allmat | kwic 'pasha '

iangamiza," alisema huku akiwapasha	wanatumia vibaya jina la
Habari hizo zimepasha	kuwa Simba imemuongeza K
Chanzo hicho cha habari kimepasha	kuwa pamoja na kutuma uj
iangamiza," alisema huku akiwapasha	wanatumia vibaya jina la
liki redio ambayo ni muhimu kupasha	wananchi habari za kuham
Bw. Ngawaiya alivipasha	vyama hivyo kuwa vina ma
Tanesco wampasha	Waziri.
o ambayo ni muhimu katika kuwapasha	wananchi habari za kuham
Ubelgiji yazipasha	nchi changa zisitegemee
Moi awapasha	wapinzani.
18 kutawala. "Vyama 12, vilimpasha	Bw Mandela kuwa hatumtak

engi wao wanawake wazee, walimpasha waziwazi kwamba hawataon
o hivyo ndani ya Bunge na kuwapasha wananchi", alisisitiza.
funika mabaki ya chakula na kupasha viporo

Alisema wapinzani walimpasha Rais Kibaki kuwa ni mpin
Saba Saba mjini Morogoro. Alipasha kwamba buzi lake lilimwa
ivyo, Bwana Ponda alimwambia mpasha habari wetu kuwa afya ya

Baadhi ya wapasha habari jana walidai Poli
Katika msikiti mmoja mpasha habari wa gazeti hili am
orogoro RCO Stephen Ngowi ameupasha umma kuwa atashughulikia

Uchunguzi wa mpasha habari hizi unaweka wazi
Aidha, uchunguzi huo umepasha kuwa Kanisa lingine la K
oni yake kufuatia taarifa ya mpasha habari mmoja wa 'CNN 'al

moja la kinamama limemwambia mpasha habari wa AN-NUUR kuwa,
oingilia uhuru wa kupata na kupasha habari.
ayanena, na mambo yajayo atawapasha habari yake.

aa katika yaliyo yangu na kuwapasha habari".

Most, but not all, are correct hits. Therefore, we convert the text into rich text and apply
the precise search method (34).

(34)

\$ echo {pasha_V| find-word

Taarifa hiyo pia inampasha {pasha_V} Mufti Mkuu wa Zanzibar kuacha
kutumia vyombo vya Dola kwa manufaa yake na kulazimisha waumini wa
madhehebu mengine kufuata itikadi zake.

Ulaya akawapasha {pasha_V} viongozi waliohudhuria semina hiyo
ikiwa_ni_pamoja_na Katibu Tawala wa wilaya ya Kinondoni Bw.

Wenye daladala wawapasha {pasha_V} PCB.

Mathew akaendelea kupasha {pasha_V} kuwa siku tatu kupita, ndipo
alipofanikiwa kuonana na Emmanuel na akamueleza namna duka la Tegeta
lilivyoibwa huku muuza_duka, Didas akiwa haonekani.

Wambura ampasha {pasha_V} Ndolanga.

Mhilu amepasha {pasha_V} kuwa alikumbwa na tukio hilo siku moja tu
baada_ya kwenda kuulalamikia uongozi wa Serikali_ya_Mtaa wake kuhusu
ongezeko la matukio uhalifu mtaani hapo.

Naye hakimu bila kificho akampasha {pasha_V} mlalamikaji huyo kwamba
endapo mshtakiwa atafika kwake na kumtukana akimbilie kituo cha polisi
kumshtaki na hatimaye atafikishwa tena mahakamani.

Lakini pia akawapasha {pasha_V} wanandugu kutohubutu kuchukua mali
alizochuma na mke wake kwa_kuwa mali hizo si zao bali ni za mke wake na
watoto wake.

Mandesi pia akalidokeza gazeti hili juu_ya kile wanachotaka kwenda
kumpasha {pasha_V} Rais Benjamin Mkapa.

7 Conclusion

The test for retrieving various types of extensions of Swahili mono-syllabic verbs shows that it is possible to retrieve precisely all types of extensions from the corpus of 25 million words. Three types of approaches were described in the Introduction, and one of them was adopted in each case, depending on which one was most appropriate.

As a conclusion we can state that if the described methods work with monosyllabic verbs and their extensions, it is likely that they work also with other word types.